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13. ABSTRACT *(Maximum 200 words)*

The conference was a big success. More than 40 scientists attended. We brought together top people in academic research condensed matter dynamics community, with experts in shock waves and energetic materials. We provided fellowships for approximately 12 young people to attend. All student fellowships were awarded on a competitive basis, using recommendation letters from the students' advisors, publication record, and subject material provided by the applicants. Except for a small amount targeted for administrative costs (mailing, secretarial, etc.,) the funding provided by ARO will be used to reimburse participant costs for the attendees and presenters. ARO support was acknowledged verbally at the meeting, in the published program, and along with travel reimbursements. Copies of materials acknowledging ARO support are included with this report.

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Final report

- The conference was a big success. The site was beautiful and everything was well managed. More than 40 scientists attended. Everybody worked very hard because the sessions ran all day and half the night, which let us present a large amount of material in a short time frame. The talks were without exception exciting and stimulating, and discussion persisted late into the night. A copy of the program with all the titles of the presentations is included.

- There was a lot of excellent science presented and all the participants learned a lot. A principle goal of the conference was accomplished, which is extremely relevant to the ARO mission. As stated in the original proposal to ARO, we brought together top people in academic research condensed matter dynamics community, with experts in shock waves and energetic materials. For example, Marvin Ross (LLNL), Yogi Gupta (Washington State), James Belak (LLNL), and Craig Tarver (LLNL) talked about shock waves and initiation phenomena, introducing the most interesting and relevant results in these fields to the academic scientists. A high point of the meeting was Prof. Suslick's talk about material synthesis using shock waves via sonochemistry. Many of the academic scientists commented to me how interesting were the problems in these fields and how nice an introduction the meeting proved to be. They are keenly interested in the possibilities of making a practical impact with their theoretical models and technologies. Conversely, the shock people were extremely pleased to be provided an introduction to the state of the art in condensed matter dynamics.

- A particularly exciting feature of the conference was the opportunities for participation by younger scientists, postdocs and students. We provided fellowships for approximately 12 young people to attend. Six of them were from UC Irvine, in Benny Gerber's and Ara Apkarian's group. They were provided with conference registration only. The other six were from Illinois, Utah, Princeton, Rochester, Stanford, and Virginia. They were provided with conference registration, local expenses and partial travel support. All student fellowships were awarded on a competitive basis, using recommendation letters from the students' advisors, publication record, and subject material provided by the applicants. Eight of the talks were given by students and postdocs. The "Gordon Conference" style of the meeting let these students meet and dine with the more established participants in a comfortable and informal atmosphere in a manner rarely possible at conventional meetings. All the feedback I received showed the students' talks were exceptionally interesting and well prepared. We have sponsored a group of extremely talented young people who all have great futures in science.

- Except for a small amount targeted for administrative costs (mailing, secretarial, etc.,) the funding provided by ARO will be used to reimburse participant costs for the attendees and presenters. ARO support was acknowledged verbally at the meeting, in the published program, and along with travel reimbursements. Copies of materials acknowledging ARO support are included with this report.

- Chuck Wight and I wish to thank ARO for its generous support. We are most appreciative of the efforts of ARO to advance science in the US, and we are honored for the opportunity to help advance the Army Research Mission.

FOURTH SYMPOSIUM ON MOLECULAR REACTION DYNAMICS IN CONDENSED MATTER

Newport Beach, CA

Program Chairs: C. Wight (Utah) and D. Dlott (Illinois)
Program sponsors: Air Force Office of Scientific Research, Army Research Office, Office of Naval Research

Wednesday, Feb. 7

Arrival and check in

6:00 - 8:00 pm Dinner

8:00 - 10:00 pm *Condensed phase dynamics I*-- chair C. Wight

8:00	Prof. Ara Apkarian	U. C. Irvine	Dynamical Spectroscopy of Many-Body Interactions
9:00	Prof. Michael D. Fayer	Stanford University	Vibrational Photon Echo Studies of Liquids, Glasses, and Proteins

Thursday, Feb. 8

7:30 - 8:50 am Breakfast

8:50 -12:00 noon *Shock waves and high pressure I* --Chair M. D. Fayer

8:50	Prof. Y. Gupta	Washington State University	Shock-induced chemical reactions in high explosives
9:40	Dr. Marvin Ross	Lawrence Livermore	Physical chemistry of shock-compressed liquids
10:30	Break		
10:50	Jens Franken	University of Illinois	Ultrafast coherent Raman Spectroscopy of Shocked Energetic Materials
11:10	Prof. Kenneth Suslick	University of Illinois	The Cavitation Hot Spot

12:00 -2:00 pm Lunch

2:00 -6:00 pm *Surface Dynamics* --chair J. Kauffman

2:00	Prof. Paul Barbara	University of Minnesota	Spatially and Temporally

			Resolved Spectroscopy of Molecular Crystals and Aggregates
2:50	Prof. Paul Hansma	UC Santa Barbara	Observing the motion of individual protein molecules
3:40	Break		
4:00	Dr. Jay Trautman	AT&T Bell Labs	Time Resolved Spectroscopy of Single Molecules
4:50	John Higgins	Princeton University	Excited State Chemical Reactions of High-spin Alkali Trimers on the Surface of Helium Clusters
5:10	Prof. Charles Harris	UC Berkeley	Femtosecond studies of electrons on surfaces and at interfaces

6:00 - 8:00 pm Dinner

8:00 - 10:00 pm *Condensed Phase Dynamics II*--Chair Ara Apkarian

8:00	Prof. Robin Hochstrasser	University of Pennsylvania	Energy and coherence relaxation of highly excited diatomic molecules in liquids
9:00	Prof. James Skinner	University of Wisconsin	Vibrational relaxation in Liquids

Friday, Feb. 9

7:30 - 9:00 am Breakfast

9:00 -12:00 noon *Condensed Phase Dynamics III*--chair Eric Chronister

9:00	Prof. Thomas Brill	University of Delaware	Spectroscopy, Kinetics and Mechanisms of Hydrothermal Reactions
9:50	Prof. John Kauffman	University of Missouri	Rotational relaxation and kinetics of diphenyl polyenes in the compressible region of CO_2
10:10	Break		
10:30	Kevin Gunde	University of Virginia	Dynamics of Chirality-dependent Intermolecular Energy Transfer in Solution
10:50	Prof. Herb Strauss	UC Berkeley	Vibrational Energy Transfer in Hydrogen-Bonded Crystals by Spectral Hole Burning
11:40	Tatanya Smirnova	University of Illinois	Measurements of Picosecond Rotational Dynamics in Liquids by EPR at 95 GHz

12:00 -2:00 pm Lunch

2:00 -6:00 pm *Condensed Phase dynamics IV*--Chair J. Michael Brown

2:00	Prof. Keith Nelson	MIT	Single-pulse and multiple-pulse femtosecond spectroscopy of solids
2:50	Dr. Craig Tarver	Lawrence Livermore National Laboratory	Shock-induced detonation
3:10	Break		
3:30	Dr. Jeffrey Hill	University of Illinois	Vibrational Relaxation at the Active Sites of Myoglobin, its Mutants and Model Heme Compounds
3:50	Kristin Weidemaier	Stanford University	Solvent Structure and Hydrodynamic Effects in Intermolecular Photoinduced Electron Transfer: Theory and Experiment

4:10	Prof. Craig Martens	UC Irvine	Ultrafast Dynamics in Solids
5:00	Alexander V. Benderskii	University of Utah	Influence of solid state envi-ronment on conformational isomerization kinetics
5:20	Dr. Alan Johnson	University of Rochester	Observation of solvent phonons in resonance Raman spectroscopy
5:40	Dr. Leonardo Martinez	UC Davis	Characterization of Solvent Clusters in a Supercritical Lennard Jones Fluid

6:00 - 8:00 pm Dinner

8:00 - 10:00 pm *Clusters*

8:00	Prof. Benny Gerber	U. C. Irvine	Dynamics of Photodissociation and Recombination in Clusters and in Solids
9:00	Prof. Carl Lineberger	University of Colorado	Dynamics of Energy transfer in Size Selected Cluster Ions: A View from the Perspective of the Solvent

Saturday, Feb. 10

7:30 - 8:50 am Breakfast

8:50 - 12:00 noon *Shock waves and high pressure II*--Chair Dana Dlott

8:50	Prof. J. Michael Brown	University of Washington	Impulsive stimulated scattering studies of molecular solids, fluids and solutions at high pressure
9:40	Prof. Eric Chronister	UC Riverside	Vibrational dynamics in molecular solids under high pressure
10:30	Break		
10:50	Dr. James Belak	Lawrence Livermore	Effects of voids and defects on shock induced energy transfer in molecular crystal
11:40	Dr. Mike McQuaid	US Army Research Lab	Spectroscopic investigation of shock-loaded XM46

12:00 noon *Conference ends*

These are example letters which have been sent to participants and students who will be reimbursed from ARO funds

Disregard the date on these letters--my computer updates the date every time I open the file

University of Illinois at Urbana-Champaign

School of Chemical Sciences

Box 37-1 Noyes Lab (217)-333-3574 (*phone*)
505 S. Mathews Ave (217)-244-3186 (*fax*)
Urbana, IL 61801 DLOTT@UIUCSCS (bitnet)
DLOTT@C.SCS.UIUC.EDU (internet)

May 21, 1997

Professor Paul Barbara
Department of Chemistry
University of Minnesota
Minneapolis, MN 55455

Dear Paul:

I am writing to ask you to give an *invited talk* at the 4th International Conference on Molecular Reaction Dynamics in Condensed Matter, to be held at Balboa Bay Club in Newport Beach, CA, Feb. 7-10, 1996. The conference is organized by Chuck Wight and Dana Dlott.

This conference will be the fourth in a series of meetings, whose purpose is to bring together a small group of established and younger scientists who are working to understand dynamics of complicated condensed phase systems at the molecular level. Registration will be limited to a maximum of 100 participants. The meeting will be organized in a "Gordon Conference" format with invited talks lasting probably 40 minutes with 20 minutes of discussion. Meals and lodging will be provided at the Bay Club to encourage extended discussions.

A tentative list of discussion topics is as follows: 1. Solid State Dynamics 2. Shock and Impact Phenomena in Materials 3. Dynamics of Nanostructures and Clusters 4. Dynamics of Energetic Materials

We hope to be able to provide you with all your necessary expenses, but it is contingent on grants which are pending with the Army Research Office, the Air Force Office of Scientific Research and the Office of Naval Research. At the present time, I can assure you we will cover your local expenses and $500 of travel expenses.

I have found these meetings to provide a lot of fun and excitement, with an excellent atmosphere to discuss science. The Balboa Bay Club is situated on one of the largest and most beautiful bayfront properties in the US. It provides the ultimate in Southern California's lifestyle, gourmet dining, luxury spas, meeting and lodging rooms.

I'll be following up this letter with a call. I hope you can commit to this meeting.

Yours truly,

Dana D. Dlott
Professor of Chemistry

University of Illinois at Urbana-Champaign

School of Chemical Sciences

Box 37-1 Noyes Lab (217)-333-3574 (*phone*)
505 S. Mathews Ave (217)-244-0789 (*fax*)
Urbana, IL 61801 DLOTT@C.SCS.UIUC.EDU (internet)

May 21, 1997

Professor Paul Barbara
Department of Chemistry
University of Minnesota
Minneapolis, MN 55455

Dear Paul:

I am writing to thank you for your spirited participation at the Fourth Molecular Dynamics symposium in Newport Beach. I certainly enjoyed your talk a lot. I am very excited about the great things you are doing with nanostructures.

Chuck Wight and I have obtained financial support from the Army Research Office, the Air Force Office of Scientific Research and the Office of Naval Research. Please submit your travel receipts to me at Illinois. Your conference fee and meals have already been covered by us. We will be able to cover your local hotel expenses and up to $500 of travel expenses. Be sure to include your social security number.

Yours truly,

Dana D. Dlott
Professor of Chemistry

University of Illinois at Urbana-Champaign

School of Chemical Sciences

Box 37-1 Noyes Lab (217)-333-3574 (*phone*)
505 S. Mathews Ave (217)-244-0789 (*fax*)
Urbana, IL 61801 DLOTT@C.SCS.UIUC.EDU (internet)

May 21, 1997

Mr. John Higgins
Department of Chemistry
Princeton University
Washington Road
Princeton, NJ 08544

Dear John:

I am writing to thank you for your participation at the Fourth Molecular Dynamics symposium in Newport Beach. Your talk on alkali clusters on the surface of helium clusters was extremely well prepared and presented. It stimulated much discussion and interest. I am sure you have a very good career ahead of you. Keep up the good work.

Chuck Wight and I have obtained financial support from the Army Research Office, the Air Force Office of Scientific Research and the Office of Naval Research for special support of student and postdoctoral attendees. Your conference fee and meals have already been covered by us. In addition, we are providing up to $350 for travel and local expenses for you. Please send me receipts totaling at least $350 with your social security number, and I will arrange for you to be reimbursed.

Yours truly,

Dana D. Dlott
Professor of Chemistry

Attendees for Balboa conference

Invited Speakers

Apkarian	UC Irvine
Barbara	Minnesota
Belak	LLNL
Brill	Delaware
Brown	U Washington
Fayer	Stanford
Gerber	UC Irvine
Gupta	Washington State
Hansma	UC Santa Barbara
Hochstrasser	U Penn
Lineberger	Colorado
Martens	UC Irvine
Nelson	MIT
Ross	LLNL
Harris	UC Berkeley
Skinner	U Wisconsin
Strauss	UC Berkeley
Suslick	Illinois
Trautman	Bell Labs
Chronister	UC Riverside
Wight	Utah
Dlott	Illinois

Attendees not receiving aid

McQuaid	ARO
Hill	Illinois
Franken	Illinois
Iwaki	Illinois
Kauffman	Missouri
Cina	Oregon
William Proud	Cambridge

Students and postdocs receiving financial aid

Gunde	Virginia
Johnson	Rochester
Higgins	Princeton
Smirnova	Illinois
Weidemeyer	Stanford
Bednirskii	Utah
Martinez	UC Davis
A. Rom	UC Irvine
Joon Jung	UC Irvine